BOTANICAL ABSTRACTS

A monthly serial furnishing abstracts and citations of publications in the international field of botany in its broadest sense.

VOLUME III

JANUARY-JUNE, 1920

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CONTENTS

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BURTON E. LIVINGSTON, Editor-in-Chief
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ENTRIES 1-161

FOREST BOTANY AND FORESTRY

RAPHAEL ZON, *Editor*

1. GUYOT, CH. **Jurisprudence. [Legal affairs.]** Rev. Eaux et Forêts 57: 60-62. 1919.—The decree of November 26, 1918, regarding the application of the law of July 2, 1913, providing that private owners may voluntarily place their forest lands under management by the State, offers hope that the law will be administered in a liberal spirit, and that local forest officers will not be too bound down by rigid regulations. It is to be hoped that the amounts received from private owners to pay for the management of their lands by the State will be largely or entirely turned over to the local forest officers to recompense them for the additional work entailed by the law.—*S. T. Dana.*

2. DOÉ, FR. **La conversion en futaie et l'oïdium. [Conversion into high forest and the oïdium].** Rev. Eaux et Forêts 57: 53-59. 1919.—The fungus oïdium appeared in several departments of the Province of Champagne about 1907. Several species are affected but particularly oak. The spread of the disease is favored by humidity, especially in the spring when vegetation is starting. Young trees are most seriously affected, particularly coppice shoots of the current year. These are killed back year after year until they finally succumb. Seedlings, in spite of the theory as to their superior vigor, suffer equally if not worse. No remedy for the disease has yet been discovered.—This new enemy threatens to make the conversion of coppice stands into high forests, already sufficiently difficult, entirely impracticable. The advisability of this system of forest management, which has recently been in considerable favor in France, is also questioned by the author on other grounds. In his judgment if oak is to be grown at all in the region with which he is familiar, the system of coppice under standards will have to be used. Until sentiment on this point crystallizes he advises doing away with reproduction cuttings or making them as light as possible.—*S. T. Dana.*

3. X. **L'Administration des eaux et forêts pendant la guerre. [The administration of waters and forests during the war.]** Rev. Eaux et Forêts 57: 45-62. 1919.—At the outbreak of the war the bulk of the personnel attached to the Administration of Waters and Forests joined the various services in the army, leaving barely a sufficient force for the administration of the French forests. As the demands for wood for military purposes gradually but steadily increased, each service in the army proceeded to satisfy its own needs with no regard to the action being taken by other services or to the future of the forests. Seeing the danger to the forests in this method of exploitation, the Minister of Agriculture succeeded in securing the establishment of an Army Forest Service (Service forestier d'Armée) which exercised general supervision over all utilization of the forests within the zone occupied by the army. Back of the lines

in the interior of the country foresters were gradually attached to the various organizations using wood and finally a general committee on wood (Comité général des Bois) was established to coördinate and control all matters relating to the utilization of wood. The actual conduct of the necessary operations was centralized in a General Inspection of Woods (l'Inspection Générale des Bois).—As a result of the enormous demands for wood for military purposes, private forests suffered more severely than national and communal forests, which were protected by the Administration of Waters and Forests. In the Landes, which suffered from unusually intensive exploitations by the Allies of the French, a special Commission was created to exercise general supervision over all cuttings in this region.—One important outcome of the war has been the inauguration of a complete inventory of the available resources of the French forests. This work is being continued since the signing of the armistice, since the information being secured by it is essential to determine the extent to which the French forests can be used in the reconstruction period.—*S. T. Dana.*

4. Federal Horticultural Board. U. S. Dept. Agric. **Amendment No. 1 to regulations supplemental to notice of quarantine No. 37.** Service and regulatory announcements 60: 21–22. 1919.—See Bot. Absts. 3, Entry 399.

5. Federal Horticultural Board. U. S. Dept. Agric. **Amendment No. 2 to regulations supplemental to notice of quarantine No. 37.** Service and regulatory announcements 61: 33. 1919.—See Bot. Absts. 3, Entry 400.

6. Federal Horticultural Board. U. S. Dept. Agric. **Nursery stock, plant and seed quarantine. Notice of quarantine No. 37 with regulations.** Service and regulatory announcements 57: 101–110. 1919.—See Bot. Absts. 3, Entry 401.

7. Detwiler, Samuel B. **Status of white pine blister rust control in 1918.** Rept. White Pine Blister Rust Control. Amer. Plant Pest Committee Bull. 2: 4–11. 1919.—See Bot. Absts. 3, Entry 396.

8. Metcalf, Haven. **Summary of the white pine blister rust situation.** Rept. White Pine Blister Rust Control, Amer. Plant Pest Committee, Bull. 2: 16. 1919.—See Bot. Absts. 3, Entry 411.

9. Boulger, G. S. [Rev. of: Webster, A. D. **Coniferous trees for profit and ornament: being a concise description of each species and variety, etc., etc.** *XX + 298 p., 28 plates.* Constable & Co. [Date not given.] [The title is very long, many of the chapter headings being included.] Jour. Bot. 57: 102–103. 1919.

10. Marsh, C. D., A. B. Clawson, and H. Marsh. **Oak leaf poisoning of domestic animals.** U. S. Dept. Agric. Bull. 767. *36 p., 19 fig.* 1919.—At Salina, Utah, during summers 1915–1918 inclusive, experiments were conducted in feeding cattle with scrub oak (*Quercus gambelli*) and at *Monahans, Texas,* 1917, with "shinnery" oak (*Quercus havardi*). Marked symptoms are constipation, emaciation, hardened feces containing mucus and blood, and edema. The small losses, estimated between 2 and 3 per cent should not cause stockmen to overlook the fact that exclusive oak feed tends to injure cattle permanently and prevent normal weight gains. Exclusive oak brush diet can be eliminated by not admitting cattle to such ranges before grass has started growth; danger of oak poisoning is small when some other forage is present. A bibliography of the subject dating back to 1662 is appended.—*A. R. Bechtel.*

11. Anonymous. **The use of wood for fuel.** U. S. Dept. Agric. Bull. 753. *40 p., 5 pl.* 1919.—Abundant supplies of wood suitable for fuel are widely distributed over the United States, particularly the eastern half, and inability to secure coal should not result in suffering during the winter. By extending the present wide use of wood in rural districts, coal and cars can be saved for more essential uses. Wood can be substituted for coal with greatest public benefit in places where rail-hauled coal can be replaced with wagon-hauled wood. Long dis-

tance rail transportation of wood is not economical. Domestic consumers in rural districts and small cities can most easily substitute wood fuel for coal. Most types of stoves and furnaces can be adapted to the use of wood. Except in case of plants which use their own wood refuse, or others in the close vicinity of plants, wood fuel is less economical than coal for factories. When coal can not be had, wood can be used with fairly satisfactory results, and is cheaper than shutting down a plant. The widespread use of wood for fuel, if only such wood as is best fitted for the purpose be taken, will be of great benefit to our forests as well as a source of revenue to their owners. Organized effort by community, municipality or State organizations will be required to promote the general use of wood fuel. Such effort will have to stimulate the demand for wood and its production, as well as direct organization of the producing, the transporting, and the marketing of fuelwood. Where a possibility of fuel shortage exists, reserves of fuelwood should be established, preferably in the nature of municipal wood yards. The comparative fuel values, and their percentages in terms of short ton coal values, both for air dry and green condition, are presented for 135 species of American woods.—*C. H. Guise.*

12. LARSEN, J. A. **Comparison of seed testing sand and in the Jacobsen germinator.** Jour. Forest. 16: 690–695. Oct., 1918.—In an argumentative article, the merits of the Jacobsen germinator are set forth. It is pointed out that the sand tests are not uniform and that the only factor in the sand test which is not a variable is the sand itself, and in addition, this is the least important of the germinating factors. In the Jacobsen germinator, the external factors are controlled to a large degree. Moisture is regulated by the height of water in the tank, the size of the water wicks and the amount of air admitted. Heat can be controlled by the use of either gas or alcohol burners, or by hot water systems beneath the tank. Through two seasons tests of germination with species of *Larix, Pinus, Picea, Pseudotsuga, Tsuja* and *Thuja*, the germinator gave the much higher percentage of germination, and all except *Tsuga* a greater maximum rate and earlier beginning. It is claimed that by using the germinator, more uniform results are secured, the work can be duplicated and standardized, while in addition, the light, heat and moisture can be controlled and measured, and conditions in the tests observed at any time, the seed being removable at will. The germinator possesses the economic advantages of low initial cost and upkeep, and is adaptable to a variety of uses and conditions while at the same time being comparatively mobile.—Why the germinator should give the best results is largely a matter of conjecture and it would appear from the elimination of the other factors that it might be due to the water vapor, the greater heat energy moist air causing the very rapid germination.—*E. N. Munns.*

13. SMITH, FRANKLIN. **Pulpwood consumption and wood pulp production in 1917.** U. S. Dept. Agric. Bull. 758. *17 p. 1 fig.* 1919. A total consumption in 1917 of 5,480,075 cords of pulpwood was reported by 241 establishments, an increase of 251,517 cords or 5 per cent over the estimated total consumption in 1916. Spruce formed 50 per cent, hemlock 14 per cent and poplar 7 per cent of all pulpwood consumed. Yellow pine, tamarack, Douglas fir, basswood, white pine, beech, birch, chestnut, and maple were consumed in quantities considerably greater than during the previous year, but their use is confined to the regions to which these species are indigenous. Of the 5,480,075 cords converted, 28 per cent went into the production of ground wood pulp, 53 per cent into sulphite, 15 per cent into soda, and 4 per cent into sulphate. Spruce is about evenly reduced as between the mechanical and sulphite processes, while 89 per cent of hemlock is reduced by the sulphite process and 93 per cent of the poplar by the soda process. Average cost per cord of wood advanced from $8.76 per cord in 1916, to $11.10 per cord in 1917, f.o.b. mill, though individual costs range from $6.00 to as high as $25.00. Taking the states as a whole, approximately 54 per cent of pulpwood was transported under 150 miles, and another 35 per cent between 150 and 400 miles. In 1917, 1,031,934 cords of pulpwood were imported, at an average value of $8.30 per cord, an increase of 27 per cent over the cost of the previous year. Imported spruce and aspen formed 14 per cent of the quantity used in 1917 in comparison with 15 per cent of the year before. The production of wood pulp totaled 3,509,939 tons, an increase of 74,938 tons, or 2 per cent, over the 1916 reported total output. Of the total output, 1,535,953 tons, or 44 per cent, was manufactured by the

mechanical process, 1,451,757, or 41 per cent, by the sulphite process, 437,430, or 13 per cent, by the soda process and 84,799 or 2 per cent by the sulphate process. Selling prices f.o.b. mills averaged $43.33 per ton, an increase of $7.86, or 22 per cent, over the 1916 average. Imports were 1 per cent less than in 1916, though the average increase in price was from $42.02 in 1916 to $69.36 in 1917, an increase of 58 per cent.—*C. H. Guise.*

14. Smith, Franklin H., and Albert H. Pierson. **Production of lumber, lath, and shingles in 1917.** U. S. Dept. Agric. Bull. 768. 1–44. *Fig. 1–3.* 1919.—The quantity of lumber reported cut in 1917 by 16,420 mills was 33,192,911,000 board feet. This excludes the output of 2,652 mills, cutting less than 50,000 board feet each. There were reported 2,470 mills as being idle. The reported cut shows a decrease of 4.6 per cent from the 1916 figures, the number of mills reporting a decrease of 4.9 per cent, and the estimated total production, a decrease of 10 per cent. An increasingly larger per cent of the total production is being contributed by the bigger operations, 61.81 per cent of the total for 1917 being furnished by mills cutting over 10,000,000 feet annually. Tables showing all phases of sawmill operation and production are presented. For 32 of the most important commercial species, separate tables show the reported production in 1917. Yellow pine produces nearly 38 per cent of the aggregate cut of all woods, though this is a decrease of 10 per cent under the production of 1916. Douglas fir ranks second with 16 per cent, an increase of 3 per cent over the figures for 1916. Oak, white pine, hemlock and western yellow pine, each furnish about 6 per cent, all other species furnishing per cents considerably below this figure. The average value of lumber f.o.b. mills in 1917 was $20.32 per M feet board measure, the highest that it has ever been and 33 per cent higher than the 1916 figure of $15.32. Figures from Alaska, presented for the first time show that 43 mills cut 33,160,000 board feet, with an average value per M feet of $21.19.—*C. H. Guise.*

15. Badoux, H. **Ueber die durch die Kleine Fichten-Blattwespe (Nematus abietum) in den Waldungen der Schweiz verursachten schäden.** [Damage in Swiss forests caused by the small pine moth (*Nematus Abietum*)] Schweiz. Zeitschr. Forstwesen 70: 1–10. *1 pl., 10 fig.* 1919.—The life cycle of the pine moth (*Nematus abietum*) is known to be completed in one or more years. The cocoon stage is indefinite, depending on weather conditions. It is also shown to be a polyphag, since it was found to complete its life cycle on the native larch as well as on the pine.—The control measures are still in the experimental stage. Control by means of parasites, ants, birds, and spraying have been tried.—The attack of the larva is recorded by increment measurements which show that the growth is reduced to zero by serious attacks, and often the trees are killed.—Up to the present time the only remedy known is to avoid planting the species subject to attack. When any species is planted in localities out of its natural range, the unthrifty growth often leads to more serious trouble. Consequently, the policy followed is to plant only such species as are native in the region reforested.—*J. V. Hofmann.*

16. Fischer, Ed. **Ueber einige im botanischen Garten in Bern kultivierte Schlangenfichten. [A cultivated snake fir in the Botanical Garden at Bern.]** Schweiz. Zeitschr. Forstwesen 70: 10–13. *Fig. 1–2.* 1919.—A new form of fir (*Picea excelsa, Lk., lusus virgata Casp.* appeared in the Botanical Garden at Bern, noted by Chief Gardener Schenk. This form did not produce any latteral branches, and seed from the tree produced one seedling true to type. Other seedlings, which apparently assumed the same form, reverted to the branching habit when they were transplanted.—*J. V. Hofmann.*

17. Helbling, C. **Ist der Holzwert eines Walden als Gemeindevermögen den Fondsgeldern gleichzustellen? [Should the stand of timber of a forest be considered the capital of the community?]** Schweiz. Zeitschr. Forstwesen 70: 13–15. 1919.—Prior to 1917 timber valuation was not considered in land valuations in the Canton of St. Gallen. Other communities held that the timber valuation should be considered as the capital of the community. When the valuation of the timber is not considered it leads to either exploitation or interferes with the land exchanges desired by the community or the governnent. The remedy lies in a fair valuation of the timber in addition to the land value.—*J. V. Hofmann.*

GENETICS

GEORGE H. SHULL, *Editor.*

18. ANONYMOUS. **Disease resistance in plants.** Gard. Chron. 65: 192. Apr. 19, 1919.—See Bot. Absts. 3, Entry 586.

19. BAERTHLEIN, K. **Über bakterielle Variabilität insbesondere sogenannte Bakterienmutationen. [On bacterial variation, especially the so-called Bacteria mutations.]** Centralbl. Bakt. 81: 369–475. 1918.

20. BALDENSPERGER, PH. J. **Punics and parthenogenesis.** Amer. Bee Jour. 58: 375–376. Nov., 1918.—Largely refutation of a former writer's assertions regarding merits of Punic bees. Punics and Syrians are unable to rear workers from a virgin.—*R. J. Garber.*

21. BRODERICK, F. W. **Hardy apples and plums for the Canadian Northwest.** Minnesota Hortic. 46: 393–399. *1 pl., 1 fig.* Nov., 1918.—Brief review of history of early fruit introductions with special stress on hardiness. Apple introductions from Russia, and crosses between standard varieties with hardy crab stock have given promising results. Russian seedling apples being tried. List and description given of several varieties of plums of *Prunus nigra* and *P. americana* which are entirely hardy and of fair quality. Hardy varieties can, perhaps, be developed by: first, plant breeding (crossing); second, selection from native stock; third, introduction from outside sources.—*E. L. Proebsting.*

22. BROWN, N. E. **The defertilization of flowers by insects.** Gard. Chron. 63: 4. 1918.—See Bot. Absts. 3, Entry 604.

23. BRUCE, J. L., **Pedigree live-stock. Development of breeding in New Zealand.** New Zealand Jour. Agric. 17: 65–70. Aug., 1918. Points out probable world-wide demand for pedigreed stock soon as transportion is available and shows New Zealand is well situated as distribution centre in Pacific. Emphasizes value of pedigreed stock and consistent use of pedigreed sires.—*H. K. Hayes.*

24. BURKHOLDER, W. H. **The production of an anthracnose-resistant white marrow bean.** Phytopath. 8: 353–359. 1918.—Rev. by H. A. A. Van der Lek in Genetica 1: 156–157. Mar., 1919.—[See also Bot. Absts. 1, Entry 293.]

25. CASTLE, W. E. **Siamese, an albinistic color variation in cats.** Amer. Nat. 53: 265–268. May–June, 1919.—See Bot. Absts. 3, Entry 236.

26. CHAMBERLAIN, C. J. **Chromosomes in Carex.** (Rev. of: HEILBORN, OTTO. **Zur Embryologie und Zytologie einiger Carex-Arten. [Embryology and cytology of several species of Carex.)** Svensk Bot. Tidskr. 12: 212–220. *14 fig.* 1918. (See Bot. Absts. 1, Entry 1329; 3, Entry 38.)] Bot. Gaz. 67: 448. May, 1919.

27. CORRENS, C. **Die Konkurrenz der männlichen und die weiblichen Keimzellen und das Zahlenverhältnis der beiden Geschlechter. [The concurrence of male and female germ cells and the numerical relations of the two sexes.]** Die Naturwiss. 6: 277–280. 1918.

28. CRANDALL, C. S. **Apple bud selection: Apple seedlings from selected trees.** Illinois Agric. Exp. Sta. Bull. 211: 181–264. *43 fig.* 1918.—See Bot. Absts. 3, Entry 242.

29. CUTLER, G. H. **A dwarf wheat.** Jour. Amer. Soc. Agron. 11: 76–78. 1919.—See Bot. Absts. 3, Entry 171.

30. DAHLGREN, K. V. O. **Coloration of plants as affected by crossing varieties.** Svensk. Bot. Tidskr. 12: 103–110. *5 fig.* 1918.

31. Danforth, C. H. **The developmental relations of brachydactyly in the domestic fowl.** Amer. Jour. Anat. 25: 97–116. 5 *fig.* Mar. 15, 1919. —Writer finds close correlation between booting of shanks and brachydactyly (reduction in size and number of bones in fourth, and sometimes third toe) in at least certain strains of fowls, and probably also pigeons. A rooster which was heterozygous in dominant characters, booting, brachydactyly, polydactyly and broad comb (walnut) was crossed with white Leghorn hens of strain in which these traits had been wholly absent. Polydactyly and broad comb (walnut or rose) segregated out, among the chicks, independently of each other and of booted shanks and brachydactyly. The latter two characters, however, were almost perfectly correlated. The fact that there was correlation in degrees of booting and brachydactyly as well as in their mere presence, is taken to indicate that relation is physiological, rather than one of genetic linkage. A study of the embryology revealed that brachydactyly could often be recognized at the ninth day of incubation, before the laying down of all of the cartilages of the phalanges (tenth day) and before the appearance of down rudiments (eleventh day). Author considers that neither condition can be a direct cause of the other but that there is some common factor. He suggests that study of the early functioning of endocrine glands might throw some light on the question.—*Sewall Wright.*

32. Davenport, C. B. **Annual report of the Director of the Department of Experimental Evolution and of the Eugenics Record Office.** Carnegie Inst. Washington Year Book 17 (1918): 103–126. 1919.—Many of staff and assistants have been in war work but special effort has been made to maintain breeding strains.—Riddle experimented on pigeons with drugs urotropin and quinine to note effects on development and sex; results not given. Analysis of brains of supposedly ataxic pigeons showed them "chemically undifferentiated or juvenile;" this line of work may throw light on chemistry of hereditary mental diseases.—Banta reports finding sex intergrades in additional lines of *Daphnia longispina*; selection within sex intergrade strains to produce more normal females or more decidedly sex-intergrading ones proved fairly effective. Banta discusses earlier evidence pointing to causal effects of environment on appearance of males or on shifting of degree of sex intergrades.—Metz reports discovery of several new mutant characters in *Drosophila virilis* and their linkage relations. Further analysis of sex-linked characters in *Drosophila virilis* continue to show correspondence with sex chromosome condition in *D. ampelophila*.—MacDowell's experiments show that rats of non-alcoholic parentage are superior to offspring of alcoholic as revealed by memory and association tests. Second generation of alcoholized rats average less than normals in weight, and number of litters is scarcely half number born to normals.—Blakeslee's investigations mostly in adzuki beans (*Phaseolus radiatus*) primarily a practical problem but some study of seed-color may be of theoretic interest; 40 new lines of adzuki beans were introduced into his cultures; a unifoliolate mutation occurred in one inbred line; chemical properties of beans and dietary characteristics are being investigated by specialists. Dwarf *Portulaca* is a simple recessive, and normal branch sports proved heterozygous, giving 3 normals : 1 dwarf. In *Datura* globe mutant selfed or used as female parent with normal gives about 3 normals to 1 globe, while normals × globes gives about 38 normals to 1 globe; mutant complex is only slightly transmitted through pollen; no pure race of globes is yet obtained. Weeping habit in mulberry is a simple Mendelian recessive.—Harris investigated dry weight and water content of seedling leaves of beans showing structural variation and found physiological differences accompanying structural variations. Harris made studies in pure statistical theory, and on variation and correlation in inflorescences of *Spirea*, sporophylls of *Ficaria*, depauperization of ascendants in relation to descendants in beans, vegetative characters in relation to fruit characters; biometrical aspects of plot-testing and of egg-production.—A review is given of work of past eight years of Eugenics Record Office, lately taken over by Carnegie Institution; it has become repository for pedigrees of better families and of those in custodial institutions; it has accumulated a large index of separate inborn characteristics of American families; it has trained field workers and maintained a field force which has gathered eugenical data on "Ishmael" tribe of Indiana, Amish sect, the "Nams" and "Jukes;" on color in albinos, and in negro-white crosses; diseases of chorea and pellagra; consanguinity; Indian hybrids, human statute, and hare lip; it has cooperated with other institutions, and advised on eugenical fitness of proposed marriages.—*J. P. Kelly.*

33. GUTHERZ, S. **Zur Lehre vom Ursprung der tierischen Keimzellen.** [To the doctrine of the origin of the animal germ cells.] Arch. Mikroskop. Anat. 92²: 1–40. *2 pl., 1 fig.* 1918.—Author finds mitoses among oögonia of *Dictyrammena marmarata* (Locustidae), and concludes that oocytes do not arise, as Vejdovsky had assumed, directly from cells of terminal filament of ovary without intervening oogonial stage. Also concludes that germ cells of this form are distinct from and wholly independent of terminal filaments or epithelium.—Well defined oögonia, of indefinite number of cell generations, are demonstrated in domestic cat. Observations lead to conclusion that primary genital cells of cat ("sex cells" of Nussbaum) may either become oögonia directly, or become indifferent epithelial cells which are then capable of becoming oögonia. Shows that absolute genetic distinction of germ and follicle cells, postulated by Rubaschkin, is not universal.—Work is regarded as qualified confirmation of Nussbaum's theory of origin of germ cells.—*A. Franklin Shull.*

34. HALL, PRESCOTT F. **Immigration restriction and world eugenics.** Jour. Heredity 10: 125–127. Mar., 1919.—See Bot. Absts. 3, Entry 1001.

35. HARLAND, S. C. **The improvement of the yield of Sea Island cotton in the West Indies by the isolation of pure strains.** West Indian Bull. 17: 145–161. 1919.—Yield is dependent on many factors, both morphological and physiological. Selection must aim to obtain type with high yielding ability for certain environmental conditions. Self fertilized seed of individual plants was used for selection studies. Types were isolated with higher mean values for number of ovules and seeds per loculus, number of loculi per boll, weight of lint per 100 seeds and average seed size. Small-seeded strains were as vigorous as larger-seeded sorts, but large seeds are desirable because of greater potential lint-bearing surface. One strain, when compared with ordinary Sea Island cotton, gave increase in weight of lint per boll, of 31 per cent.—*H. K. Hayes.*

36. HARLAND, S. C. **The inheritance of immunity to leaf-blister mite (Eriophyes gossypii, Banks) in cotton.** West Indian Bull. 17: 162–166. 1919.—Two varieties of cotton used. Immune St. Vincent crossed with susceptible Southern Cross Upland gave intermediates in F_1 inclining toward susceptible parent. Segregation occurred in F_2 while in F_3 immune bred true and non-immune again segregated. Author briefly summarizes his former breeding investigations anent immunity to *Eriophyes gossypii*.—*R. J. Garber.*

37. HAYES, H. K., and E. C. STAKMAN. **Rust resistance in timothy.** Jour. Amer. Soc. Agron. 11: 67–70. 1919.—See Bot. Absts. 3, Entry 107.

38. HEILBORN, OTTO. **Zur Embryologie und Zytologie einiger Carex-Arten.** [Embryology and cytology of several species of Carex.] Svensk Bot. Tidskr. 12: 212–220. *14 fig.* 1918. [Through review by C. J. Chamberlain. Bot. Gaz. 67: 448. May, 1919.] —Oogenesis and spermatogenesis have been studied in several species of *Carex*, special attention being given to chromosome numbers, which vary greatly in this genus. The gametophyte numbers in the forms investigated are as follows: *Carex pilulifera* 8, *C. eriocarum* 16, *C. digitata* 24, *C. caryophylla* and *C. flava* 32. Juel had already reported 52 for *C. acuta*, and Stout 37 for *C. aquatilis*. *C. pilulifera* has the largest chromosomes, and in species with higher numbers the chromosomes are correspondingly smaller. Attempts to cross the various species have not yet proved successful, but the work is still in progress. See Bot. Absts. 1, Entry 1339.—*G. H. Shull.*

39. HERWERDEN, M. A. VAN. **Over eenige nieuwe opvattingen in de celleer.** [On several new discoveries in cytology.] Genetica 1: 130–133. Mar., 1919.

40. HUMBERT, J. G. **Tomato diseases in Ohio.** Ohio Agric. Exp. Sta. Bull. 321: 157–196. *12 fig.* 1918.—See Bot. Absts. 2, Entry 767.

41. Hutcheson, T. B., and T. K. Wolfe. **Relation between yield and ear characters in corn.** Jour. Amer. Soc. Agron. 10: 250–255. Sept., 1918.—Authors find correlation between yield and many points emphasized on the score card. Yield is positively related to length, average circumference, both of ear and cob, uniformity of exhibit, shape of ears and trueness to type, character of tips, uniformity of kernels, shape of kernels, and size of germ.—Ears of Boone County White for planting were selected at random. Correlations as obtained are based on comparison for seasons 1916 and 1917, of 10 or 12 high- versus 10 or 12 low-yielding strains.—*R. J. Garber.*

42. Jaffé, H. [Rev. of: Dresel, K. **Inwiefern gelten die Mendelschen Vererbungsgesetze in der menschlichen Pathologie? (To what extent do Mendelian laws of heredity hold in human pathology?)** Virchows Arch. 224: 256 *p.* 19—] Zentralbl. Physiol. 33: 286–287. 1918.

43. Johnson, James, and R. H. Milton. **Strains of white Burley tobacco resistant to root rot.** U. S. Dept. Agric. Bull. 765. *11 p., 4 fig.* April 18, 1919.—A semi-popular discussion of the results obtained in Kentucky from the use of strains of White Burley tobacco (*Nicotiana tabacum*) resistant to the root-rot disease (*Thielavia basicola*). The tests carried on for three years in Kentucky have shown that greatly increased yields can be obtained on infested soils by the use of resistant strains. The quality of these strains does not seem to be inferior to the ordinary strains grown. The importance of the disease is discussed and resistant strains recommended where growers suspect the disease to be present. It is pointed out that the well established practice of growing only two crops of tobacco in succession in the Burley district as compared with continuous culture in some other sections where other varieties are used has come about largely as a result of the extreme susceptibility of the White Burley variety to the root-rot disease. [See Bot. Absts. 3, Entry 403.]—*L. R. Jones.*

44. Johnson, Roswell H. **The determination of disputed parentage as a factor in reducing infant mortality.** Jour. Heredity 10: 121–124. Mar., 1919.—See Bot. Absts. 3, Entry 1006.

45. Kuiper, K. [Rev. of: Haecker, Valentin. **Entwicklungsgeschichtliche Eigenschaftsanalyse (Phänogenetik). Gemeinsame Aufgaben der Entwicklungsgeschichte, Vererbungs- und Rassenlehre. [Embryological analysis of characters (Phaenogenetics). General results of embryology, genetics and eugenics.]** *8 vo, 344 p., 181 fig.* G. Fischer: Jena, 1918.] Genetica 1: 164–170. Mar., 1919.—See also Bot. Absts. 1, Entry 1216.

46. Lehmann, Ernst. **Über reziproke Bastarde zwischen Epilobium roseum und parviflorum. [Reciprocal hybrids between Epilobium roseum and parviflorum.]** Zeitschr. Bot. 10: 497–511. *7 fig.* 1918.—See Bot. Absts. 3, Entry 266.

47. Lehmann, Ernst. **Über neuere Oenothera-arbeiten. [Recent works on Oenothera.]** Zeitschr. Bot. 10: 517–551. 1918.

48. Lehmann, Ernst. [Rev. of: Stout, A. B. **Fertility in Cichorium Intybus: Self-compatibility and self-incompatibility among the offspring o self-fertile lines of descent.** Jour. Genetics 7: 71–103. Feb., 1918. (See also Bot. Absts., 1, Entry 243.)] Zeitschr. Bot. 10: 551–552. 1918.

49. Leighty, C. E., and T. B. Hutcheson. **On the blooming and fertilization of wheat flowers.** Jour. Amer. Soc. Agron. 11: 143–162. *2 fig.* 1919.

50. Lippincott, William A. **The breed in poultry, and pure breeding.** Jour. Heredity 10: 71–79 *Fig 10–16.* Feb., 1919.—See Bot. Absts. 3, Entry 1011.

51. Lombarteix, Jean Marie. **Les semis comme moyen de combattre la dégénérescence de la pomme de terre. [Seeds as means of combatting degeneration in the potato]** Rev. Hortic. 90: 170 Oct., 1918.—See Bot. Absts. 3, Entry 645.

52. LOTSY, J. P., met medewerking van H. N. KOOIMAN en M. A. J. GOEDEWAAGEN. **De Oenotheras als kernchimeres. [The Oenotheras considered as nuclear chimeras.]** Genetica 1: 7-69, 113-129. Jan.-Mar., 1919.—First of a series which Lotsy hopes to publish under collective title "Proven en beschouwingen over evolutie," ["Experiments and considerations on evolution."] The hypotheses with which he works precedes.—Contents of first article are as follows: All *Oenotheras* produce mostly gametes of same kind as those out of which they have been built up themselves; in other words passing through thousands of divisions and even the reduction division the original gametes are supposed to keep intact their individuality and to lie near each other in diploid phase independently like the composing tissues of, e.g., a *Solanum* chimera. Following the system of Renner author has given names to the different gametes with which his experiments are concerned. Most of the so-called *Oenothera* species, if not all, produce principally two kinds of gametes and are themselves the result of union of two different gametes. Therefore, Lotsy summarises that all *Oenotheras* with which Renner and he himself have worked are neither species nor hybrids, but nuclear chimeras. There is a certain restriction to be made: Author remarks that absolute nuclear chimeras do not exist since gametes will influence each other now and then in some degree. Of the more important inter-influences Lotsy mentions that the plurichromosomal mutants come into being when one of the chromosome complexes takes one or more chromosomes of the other in the reduction divisions. Exchange of chromosomes, or even of qualities, gives rise to aequichromosomal mutants. When these exchanges are seldom they result in the mutations of de Vries, and when they are frequent, to mass mutations.—In last chapter author treats problems of the gene and develops following hypothesis: Chromosomes cause characters and there are as many groups of characters as there are chromosomes. It is therefore superfluous to assume existence of independent genes; mere chance distribution of the chromosomes will explain normal Mendelian segregations. Problem of duplicate factors is solved when we accept that chromosome causing a special characteristic is represented more than once in one of the gametes of the individuals crossed *inter se*, instead of assuming that different genes have similar effects. Series of gametes present themselves forming reduplication series but these have nothing to do with real reduplication, coupling or repulsion. The data which remains unsolved are those of real coupling and repulsion, as chiefly given by the school of Bateson and of Morgan.—Briefly formulated Lotsy's hypothesis of the nuclear chimeras involves *a coupling of chromosomes* more or less extensive.—*H. N. Kooiman.*

53. LOVE, H. H., AND W. T. CRAIG. **The synthetic production of wild wheat forms.** Jour. Heredity 10: 51-64. *9 fig.* Feb., 1919.—See Bot. Absts. 3, Entry 1012.

54. MACCAUGHEY, VAUGHAN. **Race mixture in Hawaii.** Jour. Heredity 10: 90-95. Feb., 1919.—See Bot. Abstr. 3, Entry 1013.

55. MAGNUSSON, H. **Geschlechtslose Zwillinge. Eine gewöhnliche Form von Hermaphroditismus beim Rinde.** [Sexless twins. A usual form of hermaphroditism in cattle.] Archiv Anat. Physiol. 1918: 29-62. *5 pl., 8 fig.* 1918.—See Bot. Absts. 3, Entry 1014.

56. MATOUSCHEK. [Rev. of: VOGTHERR, KARL. **Über die theoretischen Grundlagen des Variabilitäts- und Deszendenz-problems. (On the theoretical foundations of the variability and descendence problems.)** Zeitschr. indukt. Abstamm. Vererb. 19: 39-72. Mar., 1918.] Zentralbl. Physiol. 33: 287-288. 1918.

57. MIYAZAWA, B. **Studies of inheritance in the japanese Convolvulus.** Jour. Genetics 8: 59-82. *Pl. 2, 1 fig.* Dec., 1918.—Original material for experiments was of two types:—A, leaf yellow (chlorina) and flower white with throat tinged magenta; B, leaf green and flower dark red. F_1 plants from reciprocal crosses between these types had green leaves and light magenta ("red") flowers with white margins, latter factor supposed to have been borne by white parent. F_2, F_3, F_4, progenies and back-crosses between F_1 plants and parent types gave further data supporting theory that green leaf color is dominant to yellow, and white margin of corolla to full color, and colored flowers to white, all allelomorphic characters segregating

in F_2 in 3:1 ratios. No homozygous green plants with "red" flowers were found. In offspring derived from green plants with red flowers leaf color always segregated into green and yellow, while segregation of flower color gave "reds" to dark reds as 2:1. Author assumes that in presence of a gene *D*, flower is dark red or some other color according as green factor *G* is in either homo- or heterozygous condition (or absent). F_1 hybrids (*GgDd*) thus always bear flowers of red (=magenta) color.—*E. E. Barker.*

58. Molz. **Über die Züchtung widerstandsfähiger Rebsorten.** [**On the breeding of resistant varieties of grapes**]. Jahrb. Deutsch. Landswirts. Ges. 33: 166–204. 1918.

59. Moore, Carl R. **On the physiological properties of the gonads as controllers of somatic and psychical characteristics. I. The rat.** Jour. Exp. Zool. 28: 137–160. *6 fig.* May 20, 1919.

60. Murbeck, Sv. **En sällregen blomanomali hos Capsella bursa-pastoris.** [**Abnormal flowers in Capsella bursa-pastoris.**] Ark. Bot. 15[12]: 1–8. *1 fig.* July 25, 1918.—See Bot. Abstr. 3, Entry 274.

61. Remlinger, P. **Contribution a l'étude de l'immunité héréditaire contre la rage.** [**Contribution to the study of hereditary immunity against rabies.**] Compt. Rend. Soc. Biol. Paris 82: 141–144. 1919.—Rabbits whose parents either were naturally immune to rabies or had been inoculated were subjected to one, two, three, or four inoculations in muscles of neck or under dura mater. Others from parents not immune were similarly treated. Rate of mortality was only slightly lower among children of immune parents than among controls, indicating little or no inheritance of immunity.—*A. Franklin Shull.*

62. Renner, O. **Oenothera Lamarckiana und die Mutations-theorie.** [**Oenothera Lamarckiana and the mutation theory.**] Die Naturwiss. 1918: 1–25. 1918.

63. Renner, O. **Weitere Vererbungsstudien an Oenotheren.** [**Further genetical studies on Oenotheras.**] Flora 11, 12 (Festschr. Stahl): 641–667. 1918.

64. Roberts, H. F. **Quantitative character-measurements in color crosses.** Science 49: 516–517. May 30, 1919.

65. Roberts, Herbert F. **The founders of the art of breeding.** Jour. Heredity 10: 99–106. *4 fig.* Mar., 1919.

66. Rosenberg, Otto. **Chromosomenzahlen und Chromosomendimensionen in der Gattung Crepis.** [**Chromosome number and chromosome dimensions in the genus Crepis.**] Ark. Bot. 15[11]: 1–16. *6 fig.* 1918.

67. Rümker, K. von. **Die Züchtung der Ölpflanzen.** [**The breeding of oil-plants.**] Jahrb. Deutsch. Landwirts. Ges. 33: 150–158. 1918.

68. Russell, E. S. [Rev. of: H. F. Osborn. **Origin of single characters as observed in fossil and living animals and plants.** (Origine de caractères particuliers, telle qu'on l'observe chez les animaux et les plantes fossiles et vivants). Amer. Nat. 49: 193–240. *10 fig.* 1915.] Scientia 25: 323–325. 1919.

69. Sakamura, Tetsu. **Kurze Mitteilung über die Chromosomenzahlen und die Verwandtschaftsverhältnisse der Triticum-Arten.** [**Brief contribution on the chromosome numbers and the relationships of Triticum species.**] Bot. Mag. Tokyō 32: 151–154. 1918.

70. Schouten, S. L. [Rev. of: Pascher, A. **Studien über die rhizopodiale Entwicklung der Flagellaten.** [**Studies on the rhizopodial development of Flagellates.**] Arch. Protistenkunde 36: 81–136. 1916.] Genetica 1: 205–206. Mar., 1919.

71. TOOLE, WM., SR. **Plant improvement by selection.** Minnesota Hortic. **46**: 368–372. Oct., 1918.—Number of examples cited of new or improved flowers and vegetables obtained by selection. Method advocated is selection of stock approaching ideal type, separate culture of progeny of each individual and discard of populations containing fewest desirable plants. Improvements in certain native flowers suggested.—*E. L. Proebsting.*

72. VAN DER LEK, H. A. A. [Rev. of: BURKHOLDER, W. H. **The production of an anthracnose-resistant White Marrow bean.** Phytopath. **8**: 353–359. 1918. (See also Bot. Absts. 1, Entry 293.)] Genetica **1**: 153–156. Mar., 1919.

73. VAN DER LEK, H. A. A. [Rev. of: MOLZ, E. **Ueber die Züchtung widerstandsfahiger Sorten unserer Kulturpflanzen. (On the breeding of resistant varieties of our cultivated plants).** Zeitschr. Pflanzenzücht. **5**: 121–124. *Fig. 17–22*, 1917.] Genetica **1**: 192–202. Mar., 1919.

74. VAN FLEET, W. **New everbearing strawberries.** Jour. Heredity **10**: 14–16. *Fig. 7–8.* Jan., 1919.—Author mentions popularity of everbearing berries and gives brief description of investigations to improve quality and runner production of present sorts. All are descendants of Pan American, sport of Bismark, *Fragaria virginiana.* Mexican and European Alpine forms, *F. vesca*, are everbearing but inferior.—Seed importations of *F. vesca* from Mexico in 1914, tried at Rockville, Maryland, and Chico, California, gave certain hardy everbearing plants which produced vigorous runners. Berries were small, well flavored, of little commercial value. Crosses with these and certain commercial spring-bearing sorts gave 400 plants of high merit though none were everbearing. Cross between these seedlings and 33,005 gave 150 seedlings of which 4 were everbearing, bore handsome, large berries equal to best commercial everbearing sorts and produced vigorous runners. [See Bot. Absts, 2, Entry 732.]—*J. H. Beaumont.*

75. VAN FLEET, W. **New pillar rose.** Jour. Heredity **10**: 136–138. *Fig. 18–19.* Mar., 1919.—See Bot. Absts. 3, Entry 1042.

76. WARBURTON, C. W. **The occurrence of dwarfness in oats.** Jour. Amer. Soc. Agron. **11**: 72–76. *Fig. 1–2.* 1919.—See Bot. Absts. 3, Entry 176.

77. WOODS, FREDERICK ADAMS. **Good qualities are correlated.** Jour. Heredity **10**: 84–86. Feb., 1919.—See Bot. Absts. 3, Entry 1047.

HORTICULTURE

J. H. GOURLEY, *Editor*

78. CHANEY, A. W. **Advertising and control of distribution.** Proc. Ann. Meet. Amer. Cranberry Growers' Assoc. **49**: 21–26. *Pl. 1.* 1919.—This is an address by the General Manager of the American Cranberry Exchange concerning the efforts of the Exchange in marketing the crops of the three cranberry growing states. Prices have varied from $2.50 to $25 per barrel during the period 1906–1919. The efforts of the Exchange in distributing and advertising the crop have brought to the growers a gain of about one million dollars.—*J. K. Shaw.*

79. CONRADI, A. F., AND H. W. BARRE. **Orchard spraying.** South Carolina Agric. Exp. Sta. Ext. Circ. 17. *8 p.* 1919.

80. DANIEL, LUCIEN. **Cultures maraichères expérimentales au bord de la mer. [Market gardening experiments on the sea coast].** Compt. Rend. Acad. Sci. Paris **168**: 116–118. 1919.—Experiments were carried out to determine methods of conserving the water in the sandy soils of dunes along the sea coast. Lettuce, chicory and certain other similar plants were grown (a) under natural conditions, (b) using buried *Sphagnum* to hold the water, and (c) using well rotted cow manure buried in the same way as the *Sphagnum.* It was found that

under conditions of drought the buried *Sphagnum* conserves the moisture and keeps the plants in better condition than manure or natural soil. The use of *Sphagnum* appears to bring about a xerophytic structure in plants, probably due to the lowering effect on the temperature of the soil around their roots.—*V. H. Young.*

81. Gale, H. V. **Grafting the grape vine.** Agric. Jour. India 14: 116–121. *Pl. 1.* 1919. —From the experiments cited, it appears that grafting the grape vine increases fruitfulness, the grafts give larger and closely set bunches. The quality of fruit was not changed appreciably. —*J. J. Skinner.*

82. Hutchinson, J. **Primula chasmophila.** Curtis Bot. Mag. 15: *Pl. 8791 (colored).* 1919.—See Bot. Absts. 3, Entry 150.

83. Hutchinson, J. **Primula tibetica.** Curtis Bot. Mag. 15: *Pl. 8796 (colored).* 1919.—To be abstracted later.

84. Hutchinson, J. **Rhododendron auriculatum.** Curtis Bot. Mag. 15: *Pl. 8786 (colored).* 1919.—To be abstracted later.

85. Hutchinson, J. **Rhododendron callimorphum.** Curtis Bot. Mag. 15: *Pl. 8789 (colored).* 1919.—To be abstracted later.

86. Skan, S. A. **Ipomoea dasysperma.** Curtis Bot. Mag. 15: *Pl. 8788 (colored).* 1919.—To be abstracted later.

87. Staff, Otto. **Protea longifolia.** Curtis Bot. Mag. 15: *Pl. 8995 (colored).* 1919.—To be abstracted later.

88. Wright, C. H. **Aloe concinna.** Curtis Bot. Mag. 15: *Pl. 8790 (colored).* 1919.—To be abstracted later.

89. Zimmerman, H. E. **Cultivated blueberries.** Amer. Bot. 25: 7–8. *1 fig.* 1919.—A yield of 1741 quarts per acre in Indiana is reported.—*W. N. Clute.*

90. Wilcox, R. B. **Cranberry disease investigations in New Jersey during 1918.** Proc. Ann. Meet. Amer. Cranberry Growers' Assoc. 49: 15–21. 1919.—Cranberries picked while wet from dew or rain and placed immediately in storage decayed badly while similar lots from which the surplus moisture had been dried by storing in an open crib, kept practically as well as those which had dried on the vines. The use of large amounts of nitrogenous fertilizers favored excessive growth of the vines and tender berries that rotted severely. The development of the bitter rot [*Glomerella cingulata vaccinii*, Shear] was closely connected with intervals of wet weather and was controlled by Bordeaux mixture best when applied just previous to a rainy period. [See Bot. Absts. 2, Entry 303.]—*J. K. Shaw.*

MORPHOLOGY, ANATOMY AND HISTOLOGY OF VASCULAR PLANTS

E. W. Sinnott, *Editor*

91. Ewart, Alfred J. **Native fibre plants.** Jour. Dept. Agric. Victoria 16: 747–750. 1918. The qualities of the native fiber plants are discussed. Fibers from the bark of *Eucalyptus obliqua, Acacia penninerveris, Melaleuca ericifolia, Brachychiton, Pimelea, Casuarina stricta, C. suberosa, Bedfordua salicena, Lavatera plebeja,* the Australian hollyhock, *Urtica, Xanthorrhoea Australis* and *X. Hastilis* and *Poa Caespitosa* are described.—*J. J. Skinner.*

92. Loeb, J. **The physiological basis of morphological polarity in regeneration.** Jour. Gen. Physiol. 1: 337–362. *Fig. 1–18.* 1919.—See Bot. Absts. 2, Entry 859.

93. Scott, D. H. **On the fertile shoots of Mesoxylon and an allied genus.** Ann. Bot. 33: 1–24. *Pl. 1–3, fig. 1–3.* 1919.—See Bot. Absts. 3, Entry 95.

PALEOBOTANY AND EVOLUTIONARY HISTORY

E. W. BERRY, *Editor*

94. SAHNI, B. **On an Australian specimen of Clepsydropsis.** Ann. Bot. 33: 81–92. *Pl. 4, 2 fig.* 1919. The structure is described of a *Clepsydropsis* collected in New South Wales in rocks probably of Carboniferous Age. The leaf trace in this genus arose as a closed ring which became flattened and then clepsydroid as a result of a median constriction. *Clepsydropsis* and *Ankyropteris* should be united in one genus. The two groups of Zygopterideae, were sharply distinct in regard to habit, the Clepsydroideae having upright stems with radially disposed leaves, and the Dineuroideae creeping rhizomes with leaves confined to the dorsal surface.—*W. P. Thompson.*

95. SCOTT, D. H. **On the fertile shoots of Mesoxylon and on allied genus.** Ann. Bot. 33: 1–21. *Pl. 1–3, fig. 1–3.* 1919.—The structure of the fertile shoots of *Mesoxylon multirame* is described. The important result is that *Mesoxylon* bore a *Cordaianthus* in all respects comparable to the inflorescence of Cordaites. The fertile shoot consists of a flattened main axis, naked below, and bearing distichously arranged bud-like branches lying in the plane of the major axis of the shoot. Each branch bears numerous spirally arranged bracts, each with a single vascular bundle of mesarc structure. No reproduction organs are attached to the specimens, but the shoots are commonly associated with *Mitrospermum* (*Cardiocarpon*) *compressum*. The author emphasizes the doubtful nature of the evidence from association but concludes that these seeds probably belonged to the plant. Stems and bud-like shoots are also described which resemble *Mesoxylon* in all important respects except that the leaf trace is single. They are placed in a new genus, *Mesoxy'opsis*.—*W. P. Thompson.*

PATHOLOGY

DONALD REDDICK, *Editor*

96. BARKER, B. T. P., AND C. T. GININGHAM. **Further experiments on the Rhizoctonia disease of asparagus.** Ann. Rept. Agric. Hortic. Res. Sta. Univ. Bristol 1917: 28–32 [1918]. Continuation of work with soil disinfectants to kill *Rhizoctonia violacea* var. *asparagi* (See

PLOT	YEAR	TREATMENT	OUNCES PER SQUARE YARD	DISEASE RATING
A	1916	Lime	30	
	1917	Lime	30	7
B	1916	Iron sulfate	0.75	
	1917	Untreated		7
C	1916	Creosote	1	
	1917	Creosote	1	4
D	1916	Carbolic acid	2	
	1917	Creosote	1	3
E	1916	Untreated		
	1917	Unt eated		10
F	1916	Naphthalene	2	
	1917	Bleaching powder	2	2
G	1916	Bleaching powder	2	
	1917	Bleaching powder	2	1

Rept. 1916: 39–40). Various substances were applied to the soil about the middle of April and 3 weeks later carrot seed was planted (carrots are said to be equally susceptible to the disease). There was no interference with germination in any case. Application of the fungicides after the fungus presumably has entered the vegetative state is thought to be advantageous. In the table those materials shown as not tested a second time did not give promise of success.

Treatment of soil bearing a perennial crop like asparagus is under investigation.—*D. Reddick.*

97. Beach, Walter S. **The Fusarium wilt of China aster.** Rept. Michigan Acad. Sci. 20: 282–307. *Pl. 18–22.* 1918.—A disease of China aster is described which causes a damping off of seedlings and a wilting of older plants. A species of *Fusarium* related to *F. conglutinans* Wollenw. was isolated from diseased tissue and its pathogenicity on the aster proved. It differs from the above-named species, however, in several slight morphological characters and in its ability to produce a disease in cabbage. On the other hand *F. conglutinans* produced a wilting of China asters in one set of experiments, but not typical of the wilt disease here described. The name *F. conglutinans* var. *callistephi* n. var. is proposed for the aster fungus. It is thought that the fungus is disseminated on the seed but having once been introduced into a new field it persists in the soil. [See Bot. Absts. 2, Entry 624.]—*W. H. Burkholder.*

98. Butler, E. J. **The rice worm (Tylenchus angustus) and its control.** Mem. Dept. Agric. India (Bot. Ser.) 10: 1–37. *Fig. 1–4.* 1919.—A large area, comprising six million acres of rice land in Bengal, is infected with the disease, locally known as "ufra" which has been found to be due to the nematode, *Tylenchus angustus.* It is stated that no plant disease, except the cereal rust, has done such great damage. The nematode feeds exclusively on living rice. Its control is more of an agricultural problem than a pathological one. It is shown that the destruction of the stubble of the winter rice will alone effect a great improvement. This together with thorough cultivation of the soil before sowing destroys the worm.—*J. J. Skinner.*

99. Conradi, A. F., and H. W. Barre. **Orchard Spraying.** South Carolina Agric. Exp. Sta. Ext. Circ. 17. *8 p.* 1919.

100. Cotton, A. D. **Apple canker (Nectria ditissima).** Jour. Bd. Agric. [London] 24: 1263–1266. *2 fig.* 1918.

101. Davis, W. H. **The aecial stage of alsike clover rust.** Proc. Iowa Acad. Sci. 24: 461–477. 1917 (1918).—See Bot. Absts. 3, Entry 353.

102. Eriksson, Jakob. **Zur Entwickelungsgeschichte des Spinatschimmels (Peronospora spinaciae (Grew.) Laub.)** [Life history of P. spinaciae.] Ark. för Bot. 15^{15}: 1–25. *Pl. 4, 3 fig.* 1918.

103. Ferdinandsen, C. S., (Mrs.) S. Rostrup, and F. K. Ravn. **Oversigt over Landbrugsplanternes Sygdomme i 1917.** [Report on diseases and pests in farm crops 1917.] Tidskr. Planteveal 25: 314–340. Kjöbenhavn, 1918.—In this 34th annual report from Denmark is mentioned 69 plant diseases. Stripe disease of barley has been prominent; on the Prentice variety, which is otherwise very resistant, was recorded 5 to 25 per cent plants diseased. The foot disease caused by *Fusarium culmorum* and other species, has been very common in the cereals due partly to moist weather at the harvest of 1916, partly to a very cold winter followed first by a cold and wet spring, and then by a very intensive drought.—Crowngall (*Bact. tumefaciens*) is recorded from fodder beets, sugar beets and fodder-sugar beets, but has been of no economic importance. Mosaic on beets has been harmful in the seed-producing districts, where cases with 50 per cent or more are reported.—The late blight of potatoes (*Phytophthora infestans*) appeared rather late, but still the bordeaux spraying gave good returns. Verticillium wilt (*V. alboatrum*) is recorded for the first time. Leaf roll of potatoes was conspicuous in the dry summer, and on one field hardly one plant was free; in a variety test at one of the experiment stations, seedlings have been badly attacked.—A single case of crowngall of alfalfa (*Urophlyctis alfalfae*) was found, the first in the country. Corn smut (*U. maydis*), which was found on corn grown in a garden, is also new.—*Ernst Gram.*

104. FISCHER, C. E. C. **Cause of the spike disease of sandal (Santalum album).** Indian Forester 44: 570–575. 1918.—Observations on the disease which support Coleman's idea of the infectious nature of the disease as opposed to the autogenetic theory proposed by Hole.—It is suggested that the disease was introduced by American missionaries on *Lantana camara* a plant which suffers from a spike disease, that the infectious agent may be ultra-microscopic and that it may be carried by sucking insects. [See Bot. Absts. 2, Entries 1177, 1296, 1297, 1298, 1303, 1304; 3, Entry 121.]—*D. Reddick.*

105. GARBOWSKI, L. **Les champignons parasites recueillie dans le gouvernement de Podolie (Russie) pendant l'eté 1915.** [Parasitic fungi collected in Podolia in 1915.] Bull. Soc. Mycol. France 33: 73–91. 1918.—Abst. in Bot. Centralbl. 138: 280. 1918.

106. GARMAN, H., AND CARRIE LEE HATHAWAY. **Treatment of seed wheat with formalin.** Kentucky Agric. Exp. Sta. Circ. 22: 23–27. 1918.—Experimental evidence to show that the viability of wheat seed may be reduced by treating with formaldehyde solution at the strength employed, 1 pint of formaldehyde to 30 gallons of water.—*D. Reddick.*

107. HAYES, H. K., AND E. C. STAKMAN. **Rust resistance in timothy.** Jour. Amer. Soc. Agron. 11: 67–70. 1919.—Eleven Cornell and 6 Minnesota varieties of timothy were sprayed with rust spores and data taken on the amount of infection. The Minnesota selections were very susceptible to the rust while the Cornell selections showed a high percentage of resistant plants. The results indicate that the production of a rust-resistant timothy could be easily accomplished.—*J. J. Skinner.*

108. HUMPHREY, HARRY B. **Cereal diseases and the national food supply.** U. S. Dept. Agric. Yearbook 1917: 481–495. *Pl. 70–73, 8 fig.* 1918.—The importance of cereal diseases, chiefly smuts and rusts, but also scab, bacterial diseases, etc., is discussed. In 1916, the spring wheat growers paid the largest cereal-disease toll ever paid in the United States. Eleven smut diseases and twelve rust diseases are compared as to relative damage produced. A discussion of seed treatment for smuts on a national scale is presented. For the control of rusts definite progress is indicated in breeding and selecting for rust-resistance. Many difficulties, however, stand in the way. Crossing rust-resistant durums and emmers with common wheats has thus far failed to yield a hybrid which is entirely satisfactory. The author is enthusiastic over hybrids obtained by crossing Kubanka and Haynes, and Kubanka and Preston. Among the hard red winter wheats three (Kanred, P 1066 and P 1068) are remarkably rust-resistant, the Kanred, especially meeting the requirements in yield, milling and baking.—*L. R. Hesler.*

109. JENSEN, C. O. **Undersigelser vedrorende nogle svulstlignende Dannelser hos planter.** [Investigations upon certain tumor-like formations in plants.] Kgl. Vetr. Lbhsk. Aarsskrift 1918: 90–143. *Pl. 1, fig. 1–17.* Kjöbenhavn, 1918.—A summary in English is appended.—The tumors formed on the leaves of *Ectreveria carundulata* have been investigated; inoculation and transplantation have given no positive information on the biological quality of the tissue. Transplantation of the nodules formed on the roots of the hybrids between *Brassica campestris* and *Brassica napus* have resulted in no abnormal growth. These nodosities cannot be considered analogous to the malign animal tumors.—The aspect, size and effect on the plants of the tumors occurring on the roots of *Beta vulgaris* vary with the different cultivated forms; the tumors are caused by *Bacterium tumefaciens*, but in older tumors the bacteria die off. Nevertheless, tissue from spontaneous tumors can be transplanted easily to normal roots, and produce fresh tumors, originating solely from the tran-planted tissue, and with the structure and appearance determined by the original plant, which is shown in a striking way, when transplantation is effected with varieties of different color.—Transplantation was successful through four generations; the pathogene was never isolated from these secondary tumors, and it, therefore, seems that the abnormal proliferative power, due to the pathogene, remains with the cells for some cell-generations independent of the continued stimulus.—By inoculation from pure cultures, tumors have resulted, varying on the different varieties ex-

actly as the spontaneous tumors, easily transplanted, and giving pure cultures of *B. tumefaciens* with no difficulty.—The cultures obtained by Friedeman from disease tumors have nothing to do with *B. tumefaciens*; the observations by Blumenthal and Hirschfeld, that *B. tumefaciens* should be able to confer the tumor-producing power to other bacteria in a culture is undoubtedly incorrect.—*Ernst Gram.*

110. McRae, W. **Blast of paddy.** Agric. Jour. India 14: 65–70. 1919.—The failure of the variety of rice (*Oryza sativa*) in 1918 in a large number of districts of India is reported, the decrease being due to a fungous disease. The disease first appears as small spots on the leaves and extends through the tissues appearing on both upper and lower surfaces. The leaf is brownish at first, the center becoming pale yellow. Spots appear on the leaf-sheath as well as on the leaf-blade. The stem finally collapses. The diseased plant produces no rice. The disease was found on several other varieties, but no widespread trouble was noted except on *Oryza sativa*. The fungus which was found is recognized as *Piricularia oryzae*. The control of the disease is by cultural and selective methods.—*J. J. Skinner.*

111. Narasimhan, M. J. **A preliminary study of the root-nodules of Casuarina.** Indian For. 44: 265–268. *Pl. 16.* 1918.—Nodules have been found on the roots of *C. glauca, C. stricta* and *C. quadrivalvis*, and are thought to be characteristic of the genus.—The nodule is a cylindrical body with a slightly swollen hyalin tip; the young nodule is whitish but later becomes brown and more or less woody. By repeated branching a cluster is formed "which attains a fairly large size."—Rod-shaped bacteria are present in the nodules. They have the characteristics of the bacteria in legume tubercles including the ability to fix nitrogen.—Further work has yet to be done in the direction of inoculating *Casuarina* seedlings to see if nodular formation can be induced. [See Bot. Absts. 1, Entry 1454.]—*D. Reddick.*

112. Patouillard, M. **Sur le parasitisme de l'Ustulina vulgaris. [The parasitism of Ustulina vulgaris.]** Bull. Soc. Path. Vég. France 4: 100. 1918.—This fungus, usually regarded as a saprophyte is said to appear to have caused the death of two basswood trees (*Tilia* sp.) The evidence given is the presence of stromata of the fungus on lesions at the base of the trees. [See Bot. Absts. 1, Entry 1366.]—*C. L. Shear.*

113. Petherbridge, F. R. **Potato spraying trials.** Jour. Bd. Agric. [Great Britain] 25: 1166–1172. 1919.—Bordeaux mixture (2 per cent) and Burgundy mixture (2 per cent) were applied at the rate of 100 gallons per acre. Bordeaux powder was used at the rate of 30 pounds per acre. Both the liquids were about equally effective in checking the blight (*Phytophthora,*) the result being a lengthening of the growing period of the leaves and stems, thereby increasing the total yield of the crop as well as reducing the proportion of diseased tubers.—After application, the wet sprays were well retained on the leaves in spite of heavy rains. Much of the dry powder, however, was washed off, and, therefore, was proportionately ineffective. If used at all, powder should be applied in the early morning during a heavy dew.—In spraying crops of potatoes which have a heavy foliage, it is difficult to cover all the leaves and there is need for a machine of a good design, having several nozzles, and a pump of sufficient power to discharge uniformly at least 200 gallons of liquid per acre.—*W. Southworth.*

114. Sanders, J. G. **The discovery of European potato wart disease in Pennsylvania.** Jour. Econ. Entomol. 12: 86–90. *Pl. 5.* 1919.—Concerning the discovery of the potato wart disease *Chrysophlyctis endobiotica* on *Solanum tuberosum*, growing in home gardens in Luzerne County, Pennsylvania in September, 1918, and the survey rapidly organized and carried out by state and federal workers. The disease was found to be in the anthracite coal mining area of northeastern Pennsylvania and not in the commercial potato region. The fact was brought out that the disease most likely came from Germany on potatoes purchased by the villagers from stores of the mining companies who in turn purchased several car loads of potatoes from Germany through the Hazelton Produce Company in 1911 and early 1912. The Federal quarantine on European potatoes was fixed on September 20, 1912. Tomatoes, *Lycopersicum esculentum* in infested soil were free from disease while *Solanum dulcamara* is slightly affected.—*A. B. Massey.*

115. SCHOEVERS, T. A. C. **Vreemde lichaampjes in zieke spinaziewortels. [Unknown corpuscles in diseased spinach roots.]** Meded. Landbouwhoogeschool Wageningen 15: 75-(84). *Pl. 10.* 1918.—English résumé on p. 83.—The main roots of diseased plants are somewhat shriveled and black; the smaller rootlets are similarly affected or are absent. Cells of root parenchyma are filled with small, (15 x 5 μ), somewhat spindle-shaped bodies. The bodies have the power of movement but this was seldom observed. Attempts to cultivate them were unsuccessful as were infection experiments. "Although it is by no means proved, the author is inclined to think, that these newly discovered X-organisms, as he proposes to call them for the present, are a form of not yet described protozoa."—*D. Reddick.*

116. SMITH, RALPH E., E. O. ESSIG, AND GEO. P. GRAY. **Handbook of plant disease and pest control.** California Agric. Exp. Sta. Circ. 204. *56 p.* 1918.

117. SPINKS, G. T. **Damping-off and collar rot of tomatoes.** Ann. Rept. Agric. Hortic. Res. Sta. Univ. Bristol 1917: 25-27. [1918].—Damping-off occurs in seedlings and collar rot in plants up to a foot in height. The cause of the trouble is an undetermined species of *Phytophthora.* The fungus persists for a long time in soil but in what condition is not known.—*D. Reddick.*

118. STEWART, ALBAN. **A consideration of certain pathologic conditions in Ambrosia trifida.** Amer. Jour. Bot. 6: 34-46. *Pl. 2, fig. 1.* 1919.—The author first describes the normal internal structure of the stem of this species, and then the modifications in structure caused by attacks of *Protomyses andinus* Lagh., of the stem borer, *Papaipema nitela* Gn., of both the fungus and the insect together, and by mechanical wounds. There is little misplacement of xylem cells in the galls formed by the parasites. Increase in parenchyma at the expense of the xylem, broadening of the rays, and reduction in number and size of vessels, are more marked in the *Protomyces* gall than in that of the insect. Mechanically wounded tissue is characterized by radical misplacement of the cells, vertical shortening of the rays, increase in parenchyma and reduction in number of vessels. Where both insect and fungus have acted together, the resulting tissue is characteristic of the fungus gall, the stimulus from the insect being inactive. The stimulus from the insect, though weaker, is able to exert an influence much farther away from the source of the stimulus than is the stimulus from the fungus.—*E. W. Sinnott.*

119. TREVOR, C. G. **A fungus attack on the deodar.** Indian Forester 44: 130-131. 1918.—Referring to article by GLOVER, Indian Forester 43: Dec. 1917, author states that the plants shown in the illustration "exhibit all the symptoms of plants suffering from insufficient light."—*D. Reddick.*

120. TROTTER, A. **La "rabbia" o "antracnosi" del cece ed il suo produttore. [Rabbia or anthracnose of chick-pea and its cause.]** Rev. Patol. Veg. 9: 105-114. 1918.—See Bot. Absts. 3, Entry 376.

121. VENKATARAMA, ATYAR, K. R. **Is spike disease of sandal (Santalum album) due to an unbalanced circulation of sap?** Indian For. 44: 316-324. *Pl. 19.* 1918.—A criticism, with supporting evidence, of: HOLE, R. S. Indian For. 43: 430-431. 1917. [See Bot. Absts. 2, Entries, 1297, 1298.]—Seven sandal trees were isolated from any host by deep encircling trenches and by keeping free from vegetation the soil within the trenches. One tree has remained healthy for 24 months and 6 trees for 18 months.—Roots were severed, haustoria cut off and sulfuric acid injected in roots to simulate damage done by fire. At the end of 15 months the wounds were largely healed, and the trees healthy.—On two occasions heat from burning brush killed or injured several sandal trees but those not too badly damaged put out healthy foliage.—Clearing out all trees except sandal in a large area gave a sudden change of "conditions necessary for an unbalanced circulation of sap" but the spike disease did not appear.—Experiments in girdling never have been accompanied or followed by spike disease.—The conclusion is reached that unbalanced circulation of sap is not the cause of spike disease. [See also Bot. Absts. 2, Entries 1177, 1297, 1303, 1304; 3, Entry 104.]—*D. Reddick.*

122. Wilcox, R. B. **Cranberry disease investigations in New Jersey during 1918.** Proc. Ann. Meet. Amer. Cranberry Growers' Assoc. 49: 15–21. 1919.—See Bot. Absts. 2, Entry 303; 3, Entry 90.

PHARMACEUTICAL BOTANY AND PHARMACOGNOSY

Henry Kraemer, *Editor*

123. Clute, W. N. **The money in drug plants.** Amer. Bot. 25: 15–20. 1919.—Prices of crude drugs are regarded as too low to make the growing of drug plants in the United States profitable. A list of the North American official drug plants is given with the price and part used indicated.—*W. N. Clute.*

124. Hotson, J. W. **Sphagnum from bog to bandage.** Publ. Puget Sound Biol. Sta. 2: 211–247. *Pl. 31–48.* March, 1919.—The whole detailed process of making surgical dressings of *Sphagnum* is given. This includes the collecting, storing, baling, sorting and drying. The equipment of a workroom for the purpose is given in detail. It is written from a war emergency standpoint, and with a view to preserving valuable facts about *Sphagnum* possibilities learned through war stress.—*T. C. Frye.*

125. Hotson, J. W. **Sphagnum as a surgical dressing.** *31 p., 18 fig.* Published independently by the Northwest Division of the American Red Cross: Seattle, undated [1918].—It is a general account of the discovery of the utility of *Sphagnum* for surgical dressings, its pre-war surgical use, and the utilization of it in the early years of the world war. Instructions are given as to where and how to get the moss and how to make the dressings of it. A table of absorbency of 6 species from various regions is given. Written primarily as a war emergency paper to be used as a guide in the making of *Sphagnum* dressings.—*T. C. Frye.*

126. Macht, David I. **A pharmacological appreciation of a Biblical reference to mass poisoning, II Kings IV, 38-41.** Bull. of The Johns Hopkins Hospital 30: 38–42. *Fig. 1–2.* 1919.—The Biblical passage is an account of the accidental poisoning of a band of prophets and the antidotal means employed by their leader, the prophet Elisha. The plant that caused the poisoning was called *Paqqù'ôt* and the antidote was *meal.* The derivation of the Hebrew name is given and it is shown from both the botanical and archaeological histories that it applies rather to the Wild Colocynth, *Citrullus Colocynthis* than to the Squirting Cucumber, *Ecballium Elaterium.* Both plants are illustrated and described and the active constituents of each named. Both plants are powerful drastic purgatives, and in overdoses are dangerous poisons, producing enteritis and even death. To test the use of meal as an antidote, experiments were carried out on dogs. A striking primary symptom is profuse salivation which will account for the exclamation of the prophets, on eating their pottage, of which the wild Colocynth was a part, that there was death in the pot. The flour or meal rendered the otherwise poisonous and lethal doses of the plants under discussion, innocuous, substantiating the truth of the Biblical passage and sustaining the popular first aid maxim to give flour in many cases of poisonings.—*Oliver A. Farwell.*

PHYSIOLOGY

B. M. Duggar, *Editor*

METABOLISM (GENERAL)

127. Diénert, F., and A. Guillerd. **Milieu à l'eau de levure autolysée pour la culture du B. coli. [Autolyzed yeast water as a culture medium for B. coli].** Compt. Rend. Acad. Sci. Paris 168: 256–257. 1919.—The high cost of peptone for bacteriological work led to a search for a substitute for it. It was found that among the products of the autolysis of yeast are to be found amino acids—tryptophane, etc.—which are also found in peptone. Bouillon made by substituting autolyzed yeast for peptone yielded two billion bacteria per cc. at the end of 24

hours, which was considered a satisfactory growth. Indol formation and the effects of phenol were satisfactorily demonstrated through the use of yeast bouillon and on analysis its constitution was found to be much more constant than peptone bouillon. The cost of the yeast medium was found to be about one-fifteenth that of bouillon made with peptone.—*V. H. Young.*

128. GHOSH, MANMATHANATH. **Notes on the hydrocyanic acid content of Jowar. (Andropogon Sorghum).** Agric. Jour. India **14**: 107–115. 1919.—The cyanogenetic glucoside present in jowar occurs principally in the leaves and young shoots; the stalk contains only a small amount. The young shoots are very poisonous. Jowar grown in soils having abundant moisture contains less hydrocyanic acid than that grown on dry soil. There was found a greater nitrogen accumulation in the leaves than in the stalks. The appearance of the greater amount of nitrogen with the greater proportion of hydrocyanic acid is taken as an indication that the production of the glucoside is correlated with the production of the nitrogenous matter and lends support to the theory that HCNl is an intermediate product in protein formation.—*J. J. Skinner.*

129. JOHNS, CARL O., A. J. FINKS, AND MABEL S. PAUL. **Studies in nutrition. I. The nutritive value of coconut globulin and coconut press cake.** Jour. Biol. Chem. **37**: 497–502. 1919.—See Bot. Absts. 2, Entry 1271.

130. MORGAN, AGNES FAY, AND ALICE M. HEINZ. **Biological values of wheat and almond nitrogen.** Jour. Biol. Chem. **37**: 215–222. 1919.

131. POSTERNAK, S. **Sur deux sels crystallisés du principe phospho-organique de réserve des plantes vertes. [Two phospho-organic salts in the reserve of green plants.]** Compt. Rend. Acad. Sci. Paris, **168**: 1216–1219. *1 fig.* 1919.—After brief mention of a number of methods for the demonstration of phospho-organic substances in plants, the author describes two salts of phospho-organic nature which he has been able to isolate and crystallize from plant tissues, together with his methods for isolating them. These two substances, a double salt of calcium and sodium and a salt of sodium, have the following empirical formulas: $C_6 H_{12} O_{27} P_6 Ca_2 Na_8$ and $C_2 H_4 O_6 P_2 Na_4$.—*V. H. Young.*

132. SANDO, CHAS. E. **Endothia pigments. II. Endothine red.** Amer. Jour. Bot. **6**: 242–251. *3 fig.* 1919.—A pigment named by the author "endothine red" and produced by *Endothia fluens*, was successfully isolated and its chemical characteristics studied and described. Evidence is presented that its formula is $C_7H_4O_4$, and that it is related to the members of the pyrocatechin group.—*E. W. Sinnott.*

133. SCHAEFFER, G. **Facteurs accessoires de la croissance et de l'equilibre. Vitamines; auximones. [Accessory factors of growth and equilibrium. Vitamines; auximones.]** Bull. Inst. Pasteur. **17**: 1–21, 41–59. *Fig. 1–10.* 1919.—This is a review of the advance of the knowledge on vitamines as food accessories, made during the years 1917–1918, and constitutes the continuation of a review that appeared in Bull. Soc. Sci. d'Hyg. 4^{1-6}, 1918, which covered the period 1914–1917. The subject is divided as follows: (1) Quantitative and qualitative needs in growth and equilibrium. (2). Vitamines or accessory factors of growth and equilibrium according to McCallum and Davis. (3). Avitaminosis. (4). Quantitative variations of vitamines in the regime, minimum quantities necessary. (5). Are other avitaminoses than those brought about by lack of the A and B forms of McCallum possible? (6) Physiological significance of vitamines. (7). Origin of vitamines. (8) Origin and role of vitamines in phanerogams, auximones of Bottomley and Mockeridge. (9) Bacterial origin of auximones, work of Mockeridge. (10) Vitamines, auximones and bacteria. (11) Aseptic life and vitamines. (12) Symbiotes and vitamines. (13) Conclusions. An extended list of the literature is given. The importance of the present paper from a botanical standpoint lies in the connection established by the author between the zoological and botanical phases of the problem. The lack of careful studies on the vitamines of pure cultures of yeast leaves a gap only partially filled

by the work of Bottomley on the action of auximones on *Azotobacter* and their action on the growth of decotiledonized seedlings grown in mineral solutions. The plant acts as intermediary between the soil bacteria that produce auximones and the animal that utilizes them. When animals are subjected to avitaminosis and die as a consequence of incomplete diet, they are found to contain large numbers of *Bacillus coli* in the intestinal tract. This is taken by the author as an indication that this organism is not capable of synthesizing vitamines, while the work of Pacini and Russell on the Eberth bacillus is recalled to show the possibility of such synthesis by bacteria grown in pure cultures in Uschinsky solution. The last consideration leads the author to a hasty review of the question of aseptic life; considering the intestinal flora as parasitic rather than symbiotic he points to the possibility that the bacteria found in normal tissues of animals and in seed coats may be the true elaborators of "food accessories." Thus the author discloses the close relation of the problem of vitamines to the subject of general biology.—*A. Bonazzi.*

METABOLISM (ENZYMES, FERMENTATION)

134. Clute, W. N. **Vinegar bees.** Amer. Bot. 25: 2–4. 1919.—An association of *Saccharomyces pyriformis* and *Bacterium vermiforme* is widely distributed in the United States under the name of "vinegar bees." A cupful of the "bees" in a weak saccharine solution (2 tablespoonfuls of sugar to a quart of water) will produce vinegar in three days, the "bees" doubling in amount meanwhile. Vinegar bees are known elsewhere as the "ginger bee plant" and used to produce a foaming beverage with the addition of ginger root. The plant, or plant association, is related to the "kephir grains" used to ferment milk in the Caucasus. —*W. N. Clute.*

135. Dowell, C. T. **Cyanogenesis in Andropogon sorghum.** Jour. Agric. Res. 16: 175–181. 1919.—In the process of drying sorghum there is a considerable loss of hydrocyanic acid, but not all of it disappears. The slower the process of drying, the less the amount of hydrocyanic acid retained in the plant. The enzyme emulsin is still in active condition in sorghum after drying. The addition of dextrose or maltose to sorghum prevents or holds back formation of hydrocyanic acid in macerated sorghum. This may be due to a reaction with hydrocyanic acid or to a lessening of the activity of emulsin.—*L. Knudson.*

ORGANISM AS A WHOLE

136. Beach, Walter Spurgeon. **Biologic specialization in the genus Septoria.** Amer Jour. Bot. 6: 1–33. *Pl. 1, 15 diagrams, 1 graph.* 1919.—See Bot. Absts. 2, Entry 1283.

137. Butler, O. **The effect of environment on the loss of weight and germination of seed potatoes during storage.** Jour. Amer. Soc. Agron. 11: 114–118. 1919.—It was found that the germination of potatoes can be retarded by lowering to 3.74°C. or by reducing the oxygen supply. Germination was retarded more effectively at 9.31°C. in reduced oxygen air than at 3.74°C. in free air. Loss of weight was greatly affected by the relative humidity of the air.—*J. J. Skinner.*

TOXIC AGENTS

138. Fred, E. B. **The effect of certain organic substances on seed germination.** Soil Sci. 6: 333–349. *Pl. 1–4.* 1918.—See Bot. Absts. 2, Entry 1332.

139. Hartwell, B. L., and F. R. Pember. **Unlike effect of acid soils on plants due to aluminum.** Soil. Sci. 6: 259–279. *Pl. 1.* 1919.—See Bot. Absts. 2, Entries 1137; 1334.

140. McHargue, J. S. **Effect of certain compounds of barium and strontium on the growth of plants.** Jour. Agric. Res. 16: 183–194. *Pl. 24.* 1919.—Cowpeas (*Vigna sinensis*), oats (*Avena sativa*), wheat (*Triticum aestivum*), and corn (*Zea mais*) were used in these experiments. The plants were grown in one gallon, earthern jars in sand to which was added 10 grams cal-

cium carbonate, 5 grams magnesium carbonate, 4 grams potassium nitrate, 2 grams potassium chloride, and 2 grams sodium thiosulfate. Under these conditions, the author claims stimulation with barium carbonate for cowpeas, oats, and corn. More marked stimulation was noted with the use of strontium carbonate. Mixtures of these carbonates resulted injuriously as also did barium sulfate. There is included in the discussion the influence of these two carbonates on the partial mineral composition of the plants. No references to previous work are made.—*L. Knudson.*

TAXONOMY OF VASCULAR PLANTS

J. M. GREENMAN, *Editor*

SPERMATOLPHYTES

141. CARDOT, J. **Rosacées nouvelles d' extrême-orient.** [**New Rosaceae from the extreme orient.**] Not. Syst. 3: 353–355, 371–382. Dec. 30, 1918.—New species and varieties, chiefly from China, are described in *Pirus, Eriobotrya, Photinia, Raphiolepis,* and *Pygeum.* *J. M. Greenman.*

142. CHAMBERLAIN, CHARLES JOSEPH. **The living Cycads.** *Small 8vo. p. xiv + 172 p. Fig. 91.* University of Chicago press: Chicago, 1919.—The subject is treated under three main captions, namely, (1) *Collecting the material,* (2) *The Life-history,* and (3) *The evolution and phylogeny of the group.* The volume is written in popular style and presents a general account of the Cycadaceae as a whole. The author's investigations of this group of plants have continued through a period of more than fifteen years and have involved extended travel and careful field study as well as critical laboratory research. Nine living genera are recognized; and it is estimated that there are about one hundred species. The genera are: *Zamia, Microcycas, Dioon,* and *Ceratozamia* of the Western Hemisphere, *Macrozamia, Bowenia,* and *Cycas* of Australia, *Stangeria* and *Encephalartos* of Africa. "A much more extended account, technical in character" is promised by the author in a later publication.—*J. M. Greenman.*

143. CHRISTY, MILLER. **The Height of Carduus (Cnicus) palustris.** Jour Bot. 57: 20–21. 1919.

144. CLUTE, W. N. **The species conception.** Amer. Bot. 25: 26. 1919.—The statement that Underwood's type sheet of *Selaginella arenicola* represents three species of the genus *Selaginella* is challenged.—*W. N. Clute.*

145. COCKERELL, T. D. A. **Notes on Lycaste.** Torreya 19: 10–12. 1919.—Three forms of this orchidaceous genus were brought by Mrs. Cockerell from Guatemala, and studied as they flowered in the greenhouse. The form known horticulturally as *Lycaste Skinneri* var. *alba* is published for the first time as a new species (*L. alba* Cockerell). This is distinguished from the true *L. Skinneri* Lindl. by the larger lateral lobes of the lip and the longer bract. *L. cruenta* Lindl. is re-described.—*J. C. Nelson.*

146. GAMBLE, J. S. **Notes on the flora of Madras.** Bull. Misc. Inf. Kew 1918: 223–228. 1918.—The notes recorded in this article pertain to families treated in the recently published second part of the *Flora of Madras* and supplement previous notes, prepared by Mr. S. T. Dunn, which appeared in the *Kew Bulletin,* 1916, page 58.—*J. M. Greenman.*

147. GAMBLE, J. S. **Decades Kewenses. XCI.** Bull. Misc. Inf. Kew 1918: 238–242. 1918.—The following flowering plants from South India are described as new to science: *Pygeum sisparense, Eugenia discifera, Jambosa Bourdillonii, J. courtallensis, Syzygium palghatense, S. travancoricum,* **Meteromyrtus** (a new genus of the Myrtaceae), *M. wynaadensis* (*Eugenia wynaadensis* Beddome), *Osbeckia lineolata, O. courtallensis,* and *O. Lawsoni.*—*J. M. Greenman.*

148. Godfrey, M. J. **Epipactis viridiflora Reich.** Jour. Bot. 57: 37–42. 1919.—*E. viridiflora* Reich. var. *leptochila* is described as new. The validity of *E. viridiflora*, *E. violacea*, and *E. latifolia* as species is pointed out, through a very detailed side by side comparison of characters. Interesting notes on the pollination and hybridization are given. The var. *leptochila* is compared with forma *dunensis* of Wheldon and Travis and forma *vectensis* of Rev. T. Stevens. The intermediates may be of hybrid origin, and therefore would not invalidate the specific distinctness.—*K. M. Wiegand.*

149. Hitchcock, A. S. **A botanical trip to Mexico.** Sci. Monthly 8: 129–145, 216–238. *34 fig., 6 maps.* 1919.

150. Hutchinson, J. **Primula chasmophila. Balf. f.** Curtis's Bot. Mag. IV, 15: *Pl. 8791 (colored).* 1919.—A new species for the name of which Professor Balfour is responsible. It is a native of Bhutan and belongs to the section *Soldanelloides* generally characterized by rather small leaves and large, conspicuous flowers, those in this species being about three and intensely violet.—*Oliver A. Farwell.*

151. Hutchinson, J. **Tagasaste and Gacia (Cytisus spp.).** Bull. Misc. Inf. Kew 1918: 21–25. 1918.—The author presents a brief statement concerning the value of "Tagasaste," *Cytisus* proliferus var. *palmensis* Christ, and "Gacia," *C. stenopetalus* Christ, as fodder plants, and incidentally gives a synoptical summary of these species and their immediate allies. Five species are characterized; one of these, *Cytisus Perezii*, endemic to the islands of Grand Canary and Hierro, is new to science. *C. proliferus* var. *palmensis* Christ is raised to specific rank.—*J. M. Greenman.*

152. Hutchinson, J. **Taxotrophis and Balanostreblus.** Bull. Misc. Inf. Kew 1918: 147–153. 1918.—The author gives a brief history of the two Urticaceous genera mentioned in the title, and also presents a revision of the species. Seven species of *Taxotrophis* are recognized, and of these *T. caudata*, *T. laxiflora*, and *T. Balansae* of India are new. *Balanostreblus* is monotypic, being represented by one species, *B. ilicifolia* Kurz, from Burma.—*J. M. Greenman.*

153. Hutchinson, J. **Notes on African Compositae. V.** Bull Misc. Inf. Kew 1918: 178–181.—1918. The present article consists of a synopsis of the genus *Hippia* as represented in South Africa. Six species are enumerated and of these, one, *H. trilobata*, is new to science, and a second, *H. pilosa*, is a new combination in this genus.—*J. M. Greenman.*

154. Hutchinson, J. **Cordia Myxa and allied species.** Bull. Misc. Inf. Kew 1918: 217–222. *3 fig.* 1918.—A brief historical account is given of *Cordia Myxa* L. and the two allied species *C. obliqua* Willd. and *C. crenata* Del., supplemented by a full bibliography and distributional notes.—*J. M. Greenman.*

155. Pott, Mrs. R. **A new species of Warburgia from the Transvaal.** Ann. Transvaal Mus. 6: 60–62. *Fig. 2.* 1918.—*Warburgia Breyeri* is described and illustrated from specimens collected on the western slope of Drakensberg, near Macoutsie River.—*J. M. Greenman.*

156. Praeger, R. Lloyd. **Notes on Sedum.—III.** Jour. Bot. 57: 49–58. 1919.—A continuation of the author's article in Jour. Bot. 56: 152. 1918. Seven species and three varieties are described as new. The novelties are as follows: *S. Cooperi*, from Bhutan; *S. crassipes* Wall. var. *cholaense*, Chola Valley, East Sikkim; *S. dasyphyllum*, L. var. *Suendermanni*, Spain; *S. rubroglaucum*, Yosemite Valley, Calif.; *S. anoicum*, origin not known; *S. Mairei*, Yunnan; *S. triphyllum*, Yunnan; *S. variicolor*, Yunnan; *S. indicum* A. Hamet var. *densiroseulatum*, Yunnan; *S. viscosum*, Yunnan.—*K. M. Wiegand.*

157. Prain, D. **The genus Chrozophora.** Bull. Misc. Inf. Kew 1918: 49–120. 1918.—A detailed history of the Euphorbiaceous genus *Chrozophora* is given, and this is followed by a synoptical revision of the species. The genus is widely distributed in the Old World and, as at present defined embraces eleven species and several varieties.—*J. M. Greenman.*

158. PRAIN, D. **A new Meconopsis from Yunnan.** Bull. Misc. Inf. Kew 1918: 211–213. 1918.—*Meconopsis compta* is described as a new species, based on specimens collected by Mr. George Forrest in southeastern Tibet.—*J. M. Greenman.*

159. ROCK, J. F. **Cyrtandreae hawaiienses, sections Schizocalyces Hillebr. and Chaetocalyces Hillebr.** Amer. Jour. Bot. 6: 47–68. *Pl. 3–8.* 1919.—The present paper is the third in a series dealing with the genus *Cyrtandra* as represented in the Hawaiian Islands. Twelve species and nine varieties are recognized under the section *Schizocalyces*, and six species and three varieties are referred to the section *Chaetocalyces*. The following are either new or result from a recombination of names: *Cyrtandra lysiosepala* (Gray) Clarke var. *Fauriei* (*C. Fauriei* Lév.), *C. lysiosepala* (Gray) Clarke var. *latifolia* (*C. lysiosepala* var. β Hillebr.), *C. lysiosepala* (Gray) Clarke var. *haleakalensis*, *C. lysiosepala* (Gray) Clarke var. *Grayi* (*C. Grayi* Clarke), *C. Conradtii*, *C. Grayana* Hillebr. var. *linearifolia*, *C. Grayana* Hillebr. var. *lanaiensis*, *C. Grayana* Hillebr. var. *nervosa*, *C. Oliveri*, *C. kohalae*, *C. halawensis*, *C. umbraculiflora*, *C. Kalichii* Wawra var. *tristis* (*C. tristis* Hillebr.), and *C. Macraei* Gray var. *parvula*.—*E. W. Sinnott.*

160. ROLFE, R. A. **New orchids. Decade XLVI.** Bull. Misc. Inf. Kew 1918: 234–238. 1918.—The following species of orchids are described as new to science: *Pleurothallis grandis* from Costa Rica, *Bulbophyllum robustum* from Madagascar, *Maxillaria parviloba* from Peru, *Chrysocycnis Lehmanii* from Ecuador, *Vanilla Havilandii* from Borneo, *V. andamanica* from tropical Asia, *Listrostachys floribunda*, *Peristylus ugandensis*, *P. Snowdenii*, and *Habenaria Hunteri* from tropical Africa.—*J. M. Greenman.*

161. RYDBERG, P. A. **Key to the Rocky Mountain flora.** *8vo. 304 p.* Published by the author: New York, 1919.—The present volume consists of a reprint of the keys in the "Flora of the Rocky Mountains and Adjacent Plains" recently published by the same author. It is intended for use in the field.—*J. M. Greenman.*